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1/77
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P017700 0.00-0228291.1

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2. Patent application number

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0228291.1

3. Full name, address and postcode of the or of each applicant (underline all surnames)

RICHARD PARRY DAVIES

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London W14 0AR

8520900001

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

Demountable Framing System

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

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Description

Claim(s)

Abstract

Drawing(s)

1/3
Introduction to drawings & key
1
3+3

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Statement of inventorship and right to grant of a patent (Patents Form 7/77)

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1 page of
Introduction to drawings & key

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Signature

Date

Richard Parry Davies
0207 602 7560
4.12.02

12. Name and daytime telephone number of person to contact in the United Kingdom

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DEMOUNTABLE FRAMING SYSTEM

BACKGROUND

The design is for an economy demountable, flat packable, display frame, suitable for self assembly and easy exchange of display items. The aim is to provide a means of securing displayed material behind a transparent screen and to provide a means of anchoring a hanging element for wall mounting and a support for table top mounting. The displayed material can be anything from art to a certificate; mirrors, lamps or electronic displays may also be accommodated. The invention comprises a structural system which can be extended to form multiple two-dimensional units and also three-dimensional structures.

Known frames include "clip frames" and a number of recent inventions such as curved self-supporting units, such as US Patent 6282828 and others by Hilary Ellison. (US). One piece hoop type frames also exist either in rubber type material (to allow a rigid frame to be inserted) or with corner slots to allow rectangular card to be inserted by flexing the card.

TR Framedone's 4.1202. JHG 24
~~It is intended to claim precedence from my own earlier patent filings, including GB 0012510.4, if possible due to common features, whilst remaining distinct from other inventions in the same general area.~~

DESCRIPTION

The present invention uses a one piece frame element capable of restraining the display screen on at least two parallel sides, (at least in the forwards direction relative to the frame element), and uses rods on the other side (ie. normally the rear) to block backward movement since the rod ends are located in holes in the structure of the frame element. The frame element could be drilled to provide these holes but using a linear box structure such as the polypropylene sheet known as "Corex" provides integral hollow tubes into which the rods can be inserted. Infact instead of two parallel rods being used four shorter lengths as "pegs" could be used also pressing the display screen forward onto the frame (specifically the forward flap on the inside edge of the frame aperture), but this is not preferred. Either rods (or pegs) thus provide pressure to secure the displayed material against the display screen.

Using Corex also provides a simple way of locating the display screen within the frame aperture since a grooved slot can be achieved on two parallel edges of the window aperture so that the display screen can be inserted. The alternative is to angle cut the window edge in a solid material.

This requires either some elasticity in the material (which is limited in Corex as found) and/or bendable display screen, and/or that the sides of the groove are designed as resiliently flexible flaps, as is envisaged in the preferred version.

For this reason, in the preferred version, at least two ends of the flap sides of the groove are cut away to form an access slot, (so that the aperture form narrows to form the grooves). The display screen can thus be inserted in a parallel motion. Depending on tolerances in the relative thicknesses of the display screen and the depth of the groove flexible plastic glass further helps in feeding the display screen into the combined slot created by both sides of the framing element acting together.

The access slot can be expressed as a void at the top and bottom of the display screen, as in the illustrated version and the rods can be used to secure decorative components exposed contained within the slot (eg. coloured twisted ribbon elements - not illustrated). Accordingly the shape of the display screen itself, given a square as the display area will be a rectangle. ie. to achieve the bearing overlap.

On a practical level the "access slot" can be doubled in width by sliding the display screen up and down, thereby gaining greater access space to manipulate the position of the displayed material, and to slide the primary locating rods in and out of their respective tubes in the frame element, so as to relieve pressure. As a minimum only the ends of two corresponding flaps on one side, such as the rear, need be cut away to form an access slot.. Movement of the rods can also be achieved by providing "prods" of similar material to gain access from the outside edge of the frame

This minimal format can be used in conjunction with a backing panel also slotted into the frame aperture in the same way, and into which a hanging device can be incorporated, or indeed simply attached to the frame itself, so even the backing panel is not a vital element of the invention. and neither are the primary rods required for securing the backing panel, or displayed material, in so far as stability of the display item can be achieved by control of dimensional tolerances. (It is envisaged that to avoid damage to the display item a backing sheet would be necessary, ideally being inserted with the display material as a "sandwich". Infact in all versions of the invention it is assumed that the display item may have a supplementary backing sheet.)

Whilst expressing the access slot top and bottom allows for the ensemble to be rotated 90 degrees to change from portrait format to a symmetrical landscape format, an alternative is to set aside this need, as in the minimal version described above, and to leave either top or bottom edge of the back panel attached to the frame.

This attachment may be scored on the front (or reverse) of the material to ease access for the base of the display screen. The open end of the, now flapped, back panel can be closed, and apply pressure to the display components as before, by means of inserted rods, (or other means, such as a toggle and eye system cut out of the material itself.) Assuming the connection of back panel to frame element is at the bottom the panel can be folded over again (with slots cut for rods as before), to make a rear table top support (ie folded in the opposite way to that previously used to make the rear support). Rods extending from the top of the frame element also penetrate the back panel where the tubular structure is exposed in the open fold and thus still provide a means of holding the display components in place. However the folded panel, tending to spring open, needs to be restrained into a working position by means of a tie. This can be achieved by re-deploying the toggle tie element used for hanging into new centrally aligned slots in the back panel, either side of the fold and appropriately spaced. (The toggles can be slid in longer slots to allow for an adjustable angle of incline in relation to the table-top. In this case the access slot for the display screen must be at the top but for the wall mounted version the ensemble can be inverted so that the gap appears at the bottom, as a matter of preference.

For extra security, especially on larger versions, and as an alternative to, or in addition to, any restraining action in forward or backward directions by the frame element, a second set of two parallel rods (or four pegs) are located into the frame structure in the same way as the rear rods. The rods are themselves held in place by being flexed, and/or being dimensionally coordinated to fit snugly into respective holes. For ease of assembly simply flexing the rods (as dimensionally necessary) over the display screen is effective but equally effective is causing them to resiliently flex towards each other by being passed through, appropriately selected, holes in a backing sheet, or back hanging plate.

Infact Corex can be used for this purpose, with rods again being passed through the tubular structure.

Again for the table top version a folded and shaped piece of Corex can provide a simple support in a variety of forms including as envisaged a long folded edge, parallel to the grain, such that adequate stiffness can be simply achieved. The strut element can then be tucked under the rear rods if, as envisaged the ensemble is rotated 90 degrees for table top presentation. Otherwise, for instance because a portrait format is required, then the rear support can be tucked under the rear rods, and preferably shaped with two slots cut in the grain so that it can be placed with the rods in the slots so that the folded section is held at an angle, thus making a firm support: the ensemble can then be displayed at an incline, as normal for table-top frames.

Additionally, extra rods can be inserted into the (structure of) the frame element next to the outer (vertical) edges, so that when slid down, (or dimensionally extended), they act as feet, raising the frame base off the table-top, and thus, as a safety feature, retracting at the top. In wall-hanging or table-top mode they are slid into a symmetrical position. So that they are firmly held in place, but are not too difficult to insert, the rear surface of the frame element can be cut so that the rods can be pushed through the now slotted tube more easily. Clearly smaller rods would slip out from their position. The presence of these rods will likely cause a deformation of the frame element forwards at the affected edges, (which is considered visually desirable.)

Performance dictates therefore that the latter rods will be of a larger gauge than the primary structural rods holding the display screen in position. The cross-sectional shape of the rods is not critical but square is preferred for the smaller primary rods and circular is more functional for outer rods.

However the larger rods are most suited to taking a primary role in the construction of multiple structures. Linear multiples are made simply by extending the rods. Three-dimensional multiples can be achieved by using the large edge rods as hinge bolts with frame elements cut at the edges to form inter-locking panels. This format is envisaged as the basis for a lamp unit, for instance, (in table-top or wall-mounted mode.)

Suitable materials include Corex frame element, with Corex hanging plate, table-top support, or backing sheet, made from the cut out panel as convenient. The display screen can be plastic glass and the rods can be made of box wood or other structurally resilient and reliable material.

Infact any materials can be used that meet the functional requirements.

INTRODUCTION TO THE DRAWINGS / ASSEMBLY

- See figures 1-4

A cut-out frame (1) with front and rear flaps(1c) on two sides of the aperture accommodates a display screen.(2) The preferred cut out shape to ease insertion of the display screen(2) cuts away the flaps of the groove (1b) to create a wider section at least at one end ,(1d) (but both ends in preference for symmetry when rotated). Again for ease of assembly, the transparent screen is dimensioned (optionally) so that , when in position,in its "grooves"(1b), it does not occupy the access slot (1d) whereby it was inserted into the frame aperture. (The ends of the slot (1d) can be shaped for stylistic effect, but not illustrated.) This also makes insertion of the rods (3)easier. They locate the displayed material (2b) and can easily moved to make changing displays easier.

The rear rods(3) are inserted into the tubular cavities in the frame element.(1) For non-transparent Corex the rods may extend beyond the outside edges of the frame to ensure bearing is achieved. Said rods are themselves held in place by being flexed together by passing through a Corex back/ hanging panel (5), (with central hole) (8), also causing flexure. An improved back panel (6) is scored and folded (9), and can be prepared with slots (7) to engage the rods, such that firmness can be achieved and the ensemble displayed at an incline on a table-top (10). Also, in preference to a simple hanging hole , the back panel is prepared with slots/holes cut in the rear outer surface to accommodate a hanging string with toggle ends for which a standard paper tie is suitable.(In this way the displayed material is still protected from direct contact with the wall hook.)

- NB A probable improvement on this may be to leave the backing panel attached to the frame element at the closed end (though possibly scored) and to score it across the grain so that it can then be folded back and tied in the correct position by means of the re-located toggle tie otherwise used for hanging the ensemble, but embedded in the tubular structure of the frame element in a similar way. See Figure 8, 8b.
- To achieve a pair of feet for the table top version, aswell as an improved structural component for multiple versions (not illustrated), and a more robust and finished look , a pair of larger rods (11), are pushed into slotted tubes (11b), at the edge of the framing element, (1). They can be adjusted for length, by sliding in the tubes, depending on format. Though likely to be a default feature ,they are not functionally necessary for the basic model of the invention.
- The drawings also show the option of extra front rods.(4) (These are shown as figures 1b, 2b, 3b,and 4b.) These may optionally be located over the groove (1b) in which the display screen(2) sits. As with the rear rods the Corex offers flexible choice in this respect to suit the displayed material. Also the display screen which would normally be a horizontal rectangle for a square image can be rotated so that it does not sit in the side grooves but relies on a pair of front rods to be secure. A smaller rectangular image can then be accommodated in the standard frame for square format, by re-locating the rear rods (3), and front rods (4).

The drawings show a portrait format in the wall-hanging version: to achieve a landscape format the ensemble can simply be rotated 90 degrees, or a separate differently proportioned version of the invention can be made. (Larger wall-mounted versions are more suited to "landscape" as a default format.)

LIST OF DRAWINGS

1/3 Wall mounting version

- Figure 1 Rear view
- fig 1 b Rear view with extra front rods (frame and display screen shown transparent.)
- Figure Plan Section (across aperture.)
- fig 2b Plan Section with extra front rods
- Figure 3 Plan Section (where rods penetrate frame.)
- fig 3b Plan Section with extra front rods
- Figure 4 Front view
- fig 4b Front view with extra front rods

2/3 Table-top version

- Figure 5 Rear view portrait version
- Figure 6 Rear view landscape version.

3/3

- Figure 7 Hanging and Support panel
- Figure 8 Table-top version with backing panel contiguous at base, scored, folded and toggle-tied to effect rear support.
- Figure 8b Side view of above.

KEY TO DRAWINGS

- 1 Frame element
 - 1b Groove
 - 1c Frame flap
 - 1d Access slot
 - 2 Display screen
 - 2b Displayed material
 - 3 Rear rods
 - 4 Front rods
 - 5 Back panel with toggled hanging system
 - 6 Back panel with hanging hole
 - 7 Slot to hold rods
 - 8 Hanging hole
 - 9 Scored fold line
 - 10 Table-top
 - 11 Edge rods (as "feet" in figure 5)
 - 12 Toggle tie/ hanger
-
-

ABSTRACT

DEMOUNTABLE FRAMING SYSTEM

(See Figure1)

The invention comprises a frame unit which enables the display screen /material to be securely accommodated within it, with other means of achieving full positional stability of the display item, and means of attachment for wall hanging and adapting for table-top display. The extra stability is principally provided by rear rods inserted into the tubular structure of the frame element (or prepared holes therein) and bearing a locating pressure onto the display screen. Minimally effective pressure may be generated by tight fitting of display/screen /backing sheet between the resilient flaps created by the cut-out window in the tubular structured frame element. The cut-out window is shaped with "access slot" to allow for display elements to be inserted at top and/or bottom of the "frame groove". The backing panel can be folded back and tied to provide a rear support for table-top use.. Front rods can be applied in the same way for extra safety. Larger rods at the edges can extend as feet and support multiple construction.

Figure 1

rear
view

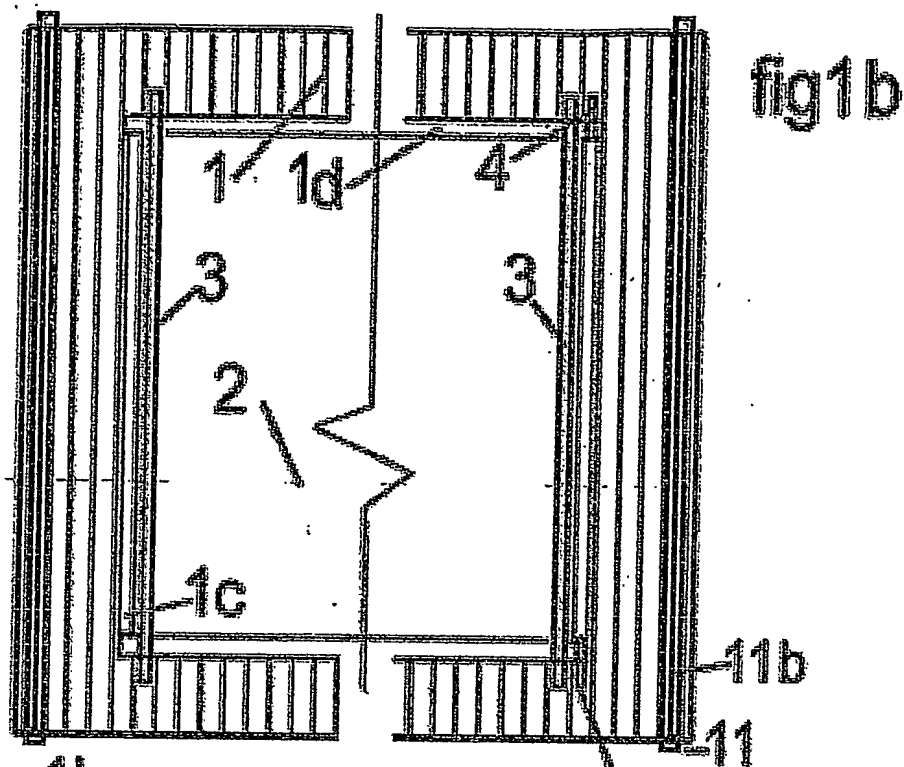


Figure 2

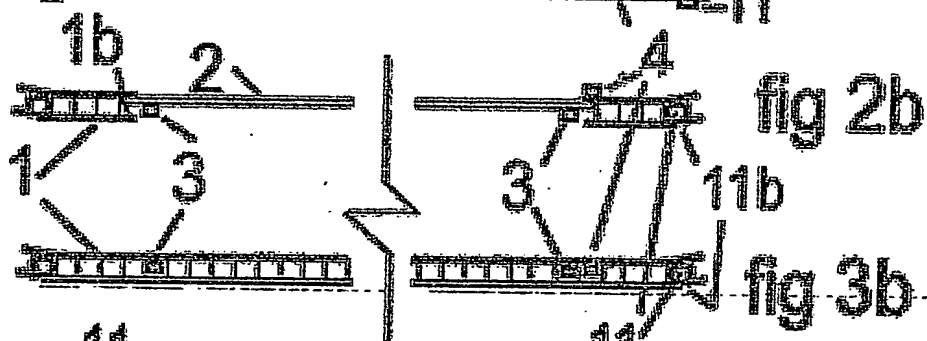


Figure 3



Figure 4

front
view

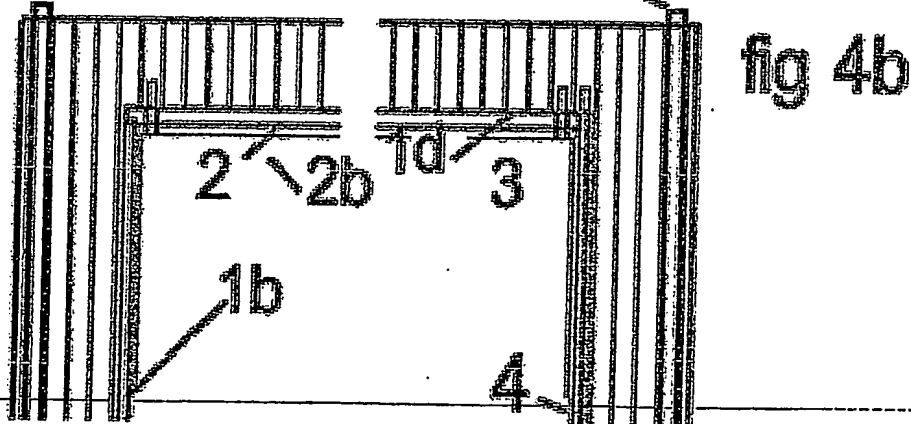


Fig 5b

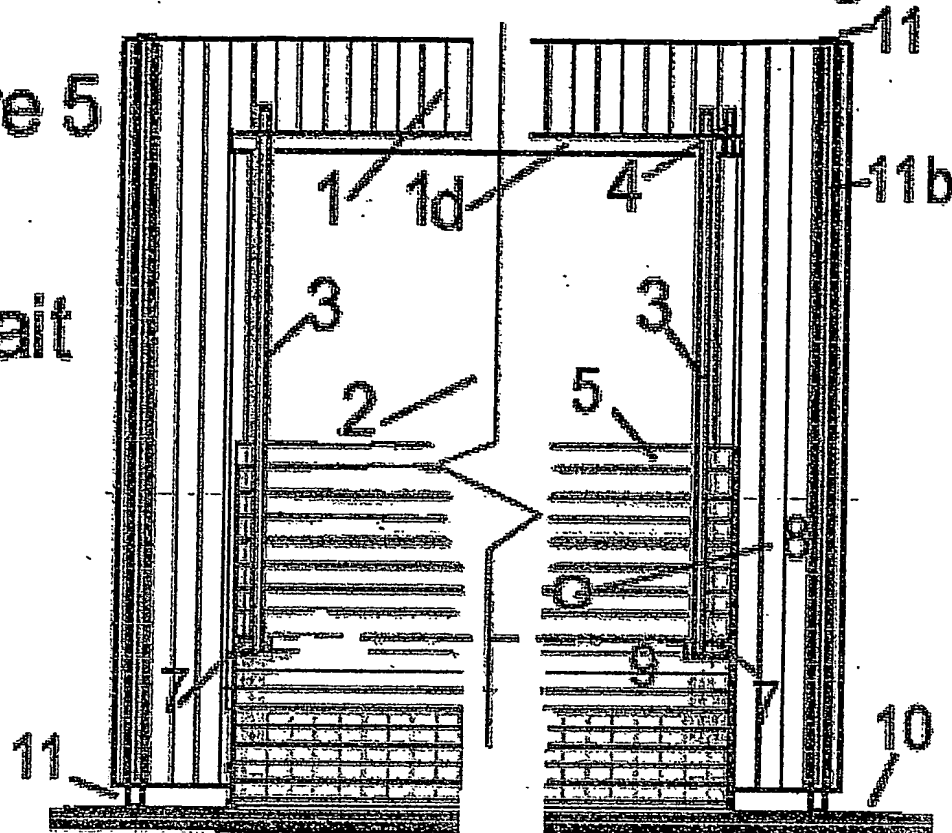
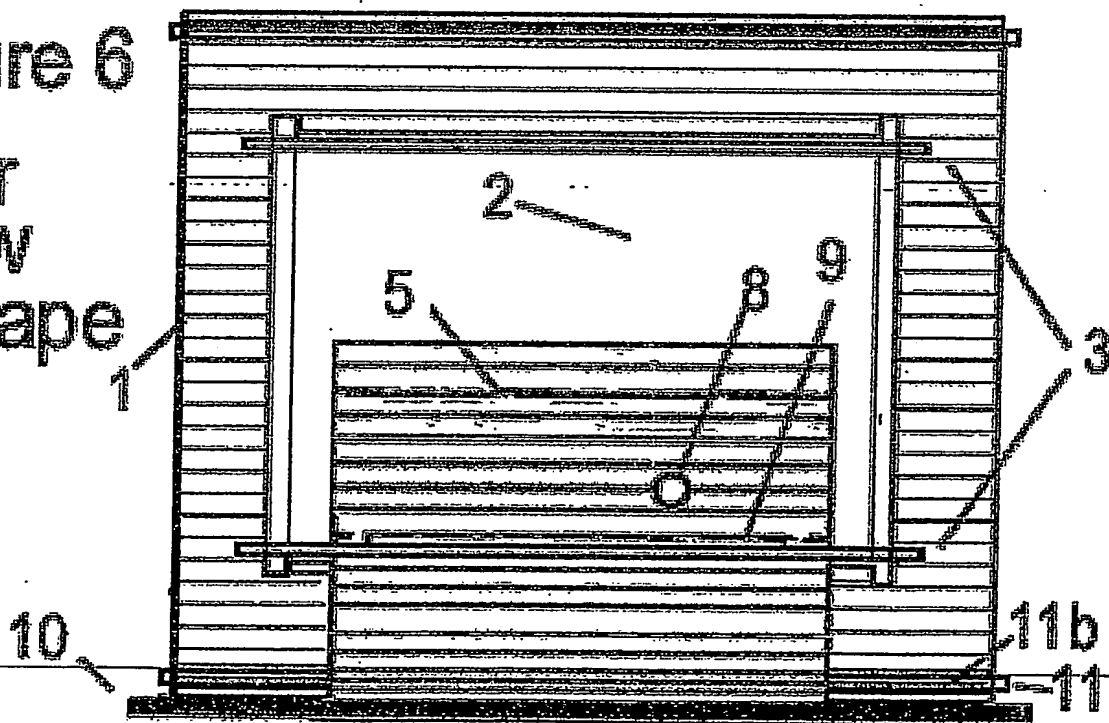
Figure 5
rear
view
portrait

Figure 6

rear
view
l'scape

3/3

Figure 7

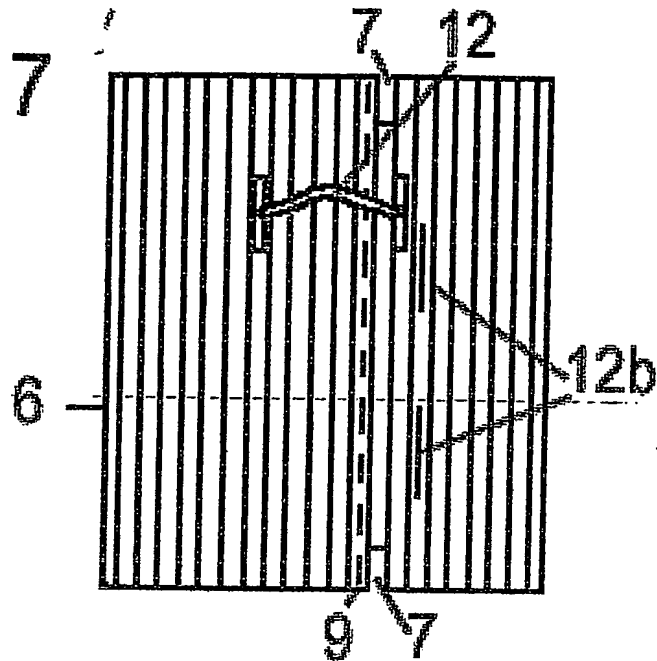


Figure 8

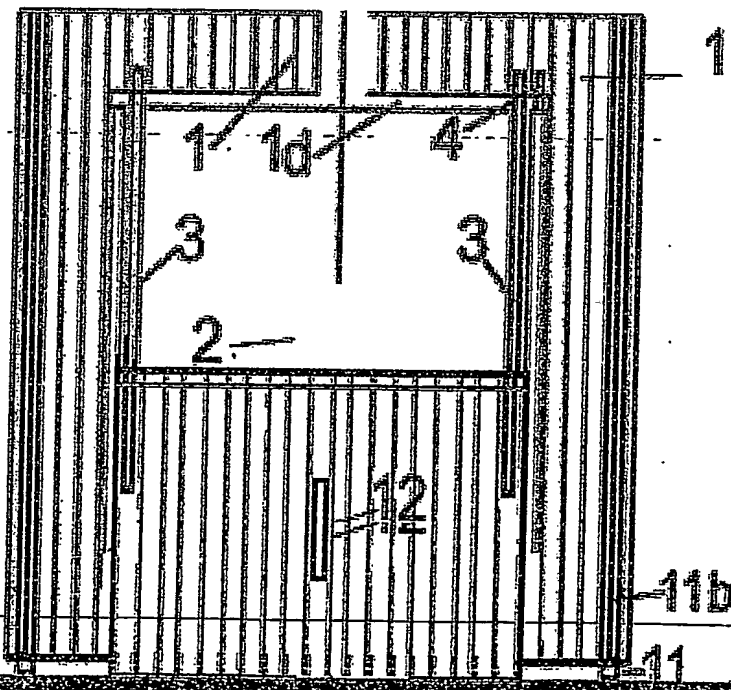
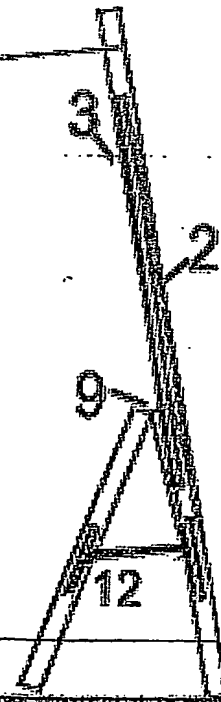


Figure 8b



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